Complete Summary

GUIDELINE TITLE

Community management of lower respiratory tract infection in adults. A national clinical guideline.

BIBLIOGRAPHIC SOURCE(S)

Scottish Intercollegiate Guidelines Network (SIGN). Community management of lower respiratory tract infections in adults. A national clinical guideline. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network (SIGN); 2002 Jun. 27 p. (SIGN publication; no. 59). [181 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Lower respiratory tract infection (LRTI), including:

- Non-pneumonic lower respiratory tract infection
- Community-acquired pneumonia
- Acute exacerbation of chronic obstructive pulmonary disease (COPD).

GUIDELINE CATEGORY

Evaluation
Management
Prevention
Treatment

CLINICAL SPECIALTY

Emergency Medicine
Family Practice
Infectious Diseases
Internal Medicine
Nursing
Pathology
Preventive Medicine
Pulmonary Medicine

INTENDED USERS

Advanced Practice Nurses
Nurses
Patients
Pharmacists
Physician Assistants
Physicians
Public Health Departments
Respiratory Care Practitioners

GUIDELINE OBJECTIVE(S)

- To present evidence-based guidelines for management of lower respiratory tract infection in adults
- To specifically address:
    - When antibiotics should be prescribed
    - How rates of reconsultation can be reduced
    - When patients should be referred to secondary care

TARGET POPULATION

Adults greater than 16 years old presenting to primary healthcare services or accident and emergency departments with acute lower respiratory symptoms and/or signs which may be due to infection

Note: The guideline does not apply to patients with asthma, lung cancer, cystic fibrosis, bronchiectasis, tuberculosis, human immunodeficiency virus infection or other forms of significant immunocompromise.

INTERVENTIONS AND PRACTICES CONSIDERED

General Management of Lower Respiratory Tract Infection

1. Assessment of severity
2. Non-hospital management
3. Patient education and general advice, including advice on smoking cessation

Management of Exacerbations of Chronic Obstructive Pulmonary Disease (COPD)

1. Sputum culture and analysis

2. Forced expiratory volume (FEV_1) in smokers
3. Pulse oximetry (oxygen saturation measurement)
4. Chest x-ray in smokers or those with unsatisfactory progress
5. Antibiotic therapy (aminopenicillins; macrolides; tetracyclines) for those with increased breathlessness and sputum purulence

Management of Community Acquired Pneumonia

1. Sputum culture
2. Blood tests for C-reactive protein (CRP)
3. Spirometry testing (forced expiratory volume and forced vital capacity) in those with cough accompanied by diffuse wheeze or crackles
4. Chest x-ray in smokers or those with unsatisfactory progress
5. Early administration of antibiotic therapy
    - Aminopenicillins and macrolides for Streptococcus pneumoniae
    - Macrolides and tetracyclines for complicated Mycoplasma pneumoniae or chlamydial pneumonia

Management of Non-pneumonic Lower Respiratory Tract Infection (LRTI)

1. Symptomatic treatment without routine antibiotic therapy
2. Patient education

Note: Sputum culture, chest x-ray and blood tests for C-reactive protein are not recommended for this condition.

Immunisation

1. Influenza vaccination in appropriate populations
2. Pneumococcal vaccination in appropriate populations

MAJOR OUTCOMES CONSIDERED

- Incidence of lower respiratory tract infection and pneumonia in adults in Scotland
- Predictive value of diagnostic tests for lower respiratory tract infection and pneumonia
- Mortality due to lower respiratory tract infection
- Incidence of antibiotic resistance
- Cure rates and relapse rates
- Protective effect of pneumococcal and influenza vaccines

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A thorough literature search was undertaken in Medline, Embase, and Healthstar to obtain material from 1985 to 1999 inclusive. The results of an Internet search on key websites were passed on to the Chairman of the group.

All material was assessed and evidence synthesised in accordance with Scottish Intercollegiate Guidelines Network (SIGN) methodology. Material not deemed to be of sufficient quality was discarded.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

1++
High quality meta-analyses, systematic reviews of randomised controlled trials (RCTs), or RCTs with a very low risk of bias

1+
Well-conducted meta-analyses, systematic reviews, or RCTs with a low risk of bias

1-
Meta-analyses, systematic reviews, or RCTs with a high risk of bias

2++
High quality systematic reviews of case control or cohort studies

High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal

2+
Well-conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal

2-
Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal

3
Non-analytic studies, e.g. case reports, case series

4
Expert opinion

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Evidence was synthesised in accordance with Scottish Intercollegiate Guidelines Network (SIGN) methodology, which includes checklists to aid guideline developers to critically evaluate the methodology of different types of study design. The result of this assessment will affect the level of evidence allocated to the paper, which in turn will influence the grade of recommendation it supports.

SIGN carries out comprehensive systematic reviews of the literature using customized search strategies applied to a number of electronic databases and the Internet. This is often an iterative process whereby the guideline development group will carry out a search for existing guidelines and systematic reviews in the first instance and, after the results of this search have been evaluated, the questions driving the search may be redefined and focused before proceeding to identify lower levels of evidence.

Once papers have been selected as potential sources of evidence, the methodology used in each study is assessed to ensure its validity. SIGN has developed checklists to aid guideline developers to critically evaluate the methodology of different types of study design. The result of this assessment will affect the level of evidence allocated to the paper, which in turn will influence the grade of recommendation it supports.

Additional details can be found in the companion document titled "SIGN 50: A Guideline Developers' Handbook." (Edinburgh [UK]: Scottish Intercollegiate Guidelines Network. [SIGN publication; no. 50], available from the SIGN Web site.)

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The process for synthesizing the evidence base to form graded guideline recommendations is illustrated in the companion document titled "SIGN 50: A Guideline Developers' Handbook." (Edinburgh [UK]: Scottish Intercollegiate Guidelines Network. [SIGN publication; no. 50], available from the SIGN website.

Evidence tables should be compiled, summarizing all the validated studies identified from the systematic literature review relating to each key question. These evidence tables form an important part of the guideline development record and ensure that the basis of the guideline development group's recommendations is transparent.

In order to address how the guideline developer was able to arrive at their recommendations given the evidence they had to base them on, SIGN has introduced the concept of considered judgement.

Under the heading of considered judgement, guideline development groups are expected to summarise their view of the total body of evidence covered by each evidence table. This summary view is expected to cover the following aspects:

- Quantity, quality, and consistency of evidence
- Generalisability of study findings
- Applicability to the target population of the guideline
- Clinical impact (i.e., the extent of the impact on the target patient population, and the resources need to treat them.)

Guideline development groups are provided with a pro forma in which to record the main points from their considered judgement. Once they have considered these issues, the group are asked to summarise their view of the evidence and assign a level of evidence to it, before going on to derive a graded recommendation.

The assignment of a level of evidence should involve all those on a particular guideline development group or subgroup involved with reviewing the evidence in relation to each specific question. The allocation of the associated grade of recommendation should involve participation of all members of the guideline development group. Where the guideline development group is unable to agree a unanimous recommendation, the difference of opinion should be formally recorded and the reason for dissent noted.

The recommendation grading system is intended to place greater weight on the quality of the evidence supporting each recommendation, and to emphasise that the body of evidence should be considered as a whole, and not rely on a single study to support each recommendation. It is also intended to allow more weight to be given to recommendations supported by good quality observational studies where randomised controlled trials (RCTs) are not available for practical or ethical reasons. Through the considered judgement process guideline developers are also able to downgrade a recommendation where they think the evidence is not generalisable, not directly applicable to the target population, or for other reasons is perceived as being weaker than a simple evaluation of the methodology would suggest.

On occasion, there is an important practical point that the guideline developer may wish to emphasise but for which there is not, nor is their likely to be, any research evidence. This will typically be where some aspect of treatment is regarded as such sound clinical practice that nobody is likely to question it. These are marked in the guideline as "good practice points." It must be emphasized that these are not an alternative to evidence-based recommendations, and should only be used where there is no alternative means of highlighting the issue.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

The grade of recommendation relates to the strength of the evidence on which the recommendation is based. It does not reflect the clinical importance of the recommendation.

Grade A: At least one meta-analysis, systematic review of randomized controlled trials (RCTs), or randomized controlled trial rated as 1++ and directly applicable to the target population; or

A body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results

Grade B: A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results; or

Extrapolated evidence from studies rated as 1++ or 1+

Grade C: A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results; or

Extrapolated evidence from studies rate as 2++

Grade D: Evidence level 3 or 4; or

Extrapolated evidence from studies rated as 2+

Good Practice Points: Recommended best practice based on the clinical experience of the guideline development group.

COST ANALYSIS

Pneumococcal Vaccination

Two recent studies of cost-effectiveness, one based in America and the other in five European countries suggest that, based on the reduction of pneumococcal bacteraemia, the vaccine is cost-effective. Compared with preventing bacteraemic pneumococcal pneumonia alone (the bulk of invasive pneumococcal disease), the cost-effectiveness of pneumococcal vaccination increases substantially when only a small proportion of additional cases of non-bacteraemic pneumococcal pneumonia are prevented.

Cost Savings for National Health Service Scotland (NHSScotland)

A preliminary economic analysis conducted by the Research Assistant to the Scottish Intercollegiate Guidelines Network (SIGN) Economic Advisor has estimated that substantial cost savings can ensue if the recommendations in this guideline are followed. Based on this analysis the number of antibacterial prescriptions for lower respiratory tract infection (LRTI) annually in Scotland is around 640 800, each costing between £3.19 and £5.18. A 40% reduction in the largely unnecessary antibiotic prescribing for lower respiratory tract infection is a reasonable target to aim for. Achieving this target by implementing this guideline would save between £1-1.33 million annually for NHSScotland. These

conservative estimates do not take into account further savings from reduced consultations with general practitioners (GPs) due to antibiotic side effects or requests for repeat prescriptions.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

A national open meeting is the main consultative phase of Scottish Intercollegiate Guidelines Network (SIGN) guideline development, at which the guideline development group present their draft recommendations for the first time. The national open meeting for this guideline was held on 9 February 2001 and was attended by 150 representatives of all the key specialties relevant to the guideline. The draft guideline was also available on the SIGN web site for a limited period at this stage to allow those unable to attend the meeting to contribute to the development of the guideline.

The guideline was reviewed in draft form by a panel of independent expert referees who were asked to comment primarily on the comprehensiveness and accuracy of interpretation of the evidence base supporting the recommendations in the guideline.

As a final quality control check, the guideline was reviewed by an Editorial Group comprising the relevant specialty representatives on the SIGN Council. (Refer to original guideline for list of specialty representatives.)

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note from the Scottish Intercollegiate Guidelines Network (SIGN) and National Guideline Clearinghouse (NGC): In addition to these evidence-based recommendations, the guideline development group also identifies points of best clinical practice in the full-text guideline document.

The strength of recommendation grading (A, B, C, D) and levels of evidence (1++, 1+, 1– , 2++, 2+, 2–, 3, 4) are repeated at the end of the "Major Recommendations" field.

<u>Assessment of Severity</u>

C: Manage patients with lower respiratory tract infection (LRTI) routinely in the community, using assessment protocols based on the features of severity to identify those requiring hospital admission.

C: Consider the individual patient´s needs and the availability of support at home. (Refer to Box 1 in the original guideline for details about features of severity)

Exacerbations of Chronic Obstructive Pulmonary Disease (COPD)

Treatment

B: Patients with significant airway obstruction who have an increase in breathlessness and sputum purulence should be treated with an antibiotic.

Community Acquired Pneumonia

Investigation

B: C-reactive protein (CRP) levels are of limited use as a diagnostic tool for community acquired pneumonia and should not be performed routinely.

D: Consider spirometry in the convalescent period to diagnose asthma or COPD in patients with community acquired pneumonia presenting with a cough associated with diffuse wheeze or crackles.

C: Chest x-ray should not be used routinely for patients with acute symptoms of community acquired pneumonia.

C: Consider chest x-ray in the convalescent period in community acquired pneumonia patients who smoke, or if patients do not make satisfactory progress.

Treatment

D: Early administration of antibiotics in patients with pneumonia is essential

Non-pneumonic Lower Respiratory Tract Infection (LRTI)

Investigation

B: Sputum culture, chest x-ray and blood tests for C-reactive protein (CRP) should not be carried out routinely in non-pneumonic LRTI.

Treatment

A: Antibiotics should not normally be prescribed for previously well patients who do not have signs in the chest or features of severity. (Refer to Box 1 in the original guideline for details about features of severity)

A: Sputum purulence alone is not an indication for antibiotics in a previously well patient with no chest signs.

Immunisation

Influenza Vaccination

B: Influenza vaccination is recommended for those aged 65 years and older and for people of any age with underlying chronic disease or living in long-stay residential care, and for health and social care workers.

C: Influenza vaccine is contraindicated for those with hypersensitivity to hen´s eggs.

Pneumococcal Vaccination

B: Pneumococcal polysaccharide vaccine (PPV) should be given to all those aged two years or older in whom pneumococcal infection is likely to be more common or more serious in terms of increased morbidity and mortality (those with chronic lung disease, underlying medical conditions, or are severely immunocompromised).

B: Pneumococcal polysaccharide vaccine should be given to all people over the age of 65 years, on a one-off basis, to be administered when patients receive their routine annual influenza vaccine.

B: Pneumococcal and influenza vaccines can safely be given concurrently at different sites.

Key Messages for Patients

Lifestyle

D: General practitioners (GPs) can reduce a patient´s expectations of being prescribed an antibiotic and reduce unnecessary reconsultations by addressing four issues at consultation: (a) the natural course of the illness; (b) the lack of effectiveness of antibiotics; (c) the problems of antibiotic resistance; (d) the side effects of antibiotics.

B: General practitioners should give non-pneumonic lower respiratory tract infection (LRTI) patients written information to help explain the illness, to explain the decision not to prescribe an antibiotic, and to reduce reconsultation rates.

Definitions:

Strength of Recommendation Grades

A
At least one meta-analysis, systematic review of randomised controlled trials (RCTs), or RCT rated as 1++ and directly applicable to the target population; or

A body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results

B
A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results; or

Extrapolated evidence from studies rated as 1++ or 1+

C
A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results; or

Extrapolated evidence from studies rated as 2++

D
Evidence level 3 or 4; or

Extrapolated evidence from studies rated as 2+

Levels of Evidence

1++
High quality meta-analyses, systematic reviews of randomised controlled trials (RCTs), or RCTs with a very low risk of bias

1+
Well-conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias

1 –
Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias

2++
High quality systematic reviews of case control or cohort studies

High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal

2+
Well-conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal

2–
Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal

3
Non-analytic studies, e.g., case reports, case series

4
Expert opinion

CLINICAL ALGORITHM(S)

The original guideline contains a clinical algorithm for management of adults in the community with symptoms of lower respiratory tract infections.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see Major Recommendations).

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Improved antibiotic prescribing quality by general practitioners, in particular reduction in antibiotic use where benefits of antibiotics will not or are unlikely to be obtained
- Studies have shown that influenza immunisation in high risk groups leads to fewer hospitalisations for pneumonia and influenza and fewer outpatient visits for respiratory conditions.

POTENTIAL HARMS

- Side effects of antibiotics
- Systemic reaction to influenza vaccine
- Quinolones should be used with caution because of potential toxicity and the development of resistance.

CONTRAINDICATIONS

CONTRAINDICATIONS

Influenza vaccine is contraindicated in those with hypersensitivity to hen´s eggs

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- This guideline is not intended to be construed or to serve as a standard of medical care. Standards of care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge and technology advance and patterns of care evolve. These parameters of practice should be considered guidelines only. Adherence to them will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results.
- The ultimate judgement regarding a particular clinical procedure or treatment plan must be made in light of the clinical data presented by the patient and the diagnostic and treatment options available. However, it is advised that significant departures from the national guideline or any local guidelines derived from it should be fully documented in the patient´s case notes at the time the relevant decision is taken.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Implementation of national clinical guidelines is the responsibility of each National Health Service (NHS) Trust and Health Board and is an essential part of clinical governance. It is acknowledged that every Trust cannot implement every guideline immediately on publication, but mechanisms should be in place to ensure that the care provided is reviewed against the guideline recommendations and the reasons for any differences assessed and, where appropriate, addressed. These discussions should involve both clinical staff and management.

Local arrangements may then be made to implement the national guideline in individual hospitals, units and practices, and to monitor compliance. This may be done by a variety of means, including patient-specific reminders, continuing education and training, and clinical audit.

Refer to the original guideline for key points for clinical audit.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Scottish Intercollegiate Guidelines Network (SIGN). Community management of lower respiratory tract infections in adults. A national clinical guideline. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network (SIGN); 2002 Jun. 27 p. (SIGN publication; no. 59). [181 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2002 Jun

GUIDELINE DEVELOPER(S)

Scottish Intercollegiate Guidelines Network - National Government Agency [Non-U.S.]

SOURCE(S) OF FUNDING

Scottish Executive Health Department

GUIDELINE COMMITTEE

Not stated

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Guideline Development Group: Dr John Winter (Chairman); Ms Francesca Chappell; Dr Graham Douglas; Dr Ali El-Ghorr; Dr Iain Farmer; Dr Iain Gould; Dr Alison Grove; Mrs Pauline Hamilton; Dr Helene Irvine; Dr Gavin Lindsay; Dr Carol McKinnon; Dr Kathleen Onori; Dr Gavin Petrie; Dr Nigel Pexton; Mr Ken Schofield; Dr Philip Welsby

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

All members of the Scottish Intercollegiate Guidelines Network (SIGN) guideline development groups are required to complete a declaration of interests, both personal and non-personal. A personal interest involves payment to the individual concerned, e.g., consultancies or other fee-paid work commissioned by or shareholdings in the pharmaceutical industry; a non-personal interest involves payment which benefits any group, unit or department for which the individual is responsible, e.g., endowed fellowships or other pharmaceutical industry support. SIGN guideline group members should be able to act as independently of external commercial influences as possible, therefore, individuals who declare considerable personal interests may be asked to withdraw from the group. Details of the declarations of interest of any guideline development group member(s) are available from the SIGN executive.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline was issued in 2002 and will be considered for review in 2005, or sooner if new evidence becomes available.

Any amendments to the guideline in the interim period will be noted on the Scottish Intercollegiate Guidelines Network (SIGN) Web site.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Scottish Intercollegiate Guidelines Network (SIGN) Web site:

- HTML Format
- Portable Document Format (PDF)

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Quick reference guide: Community management of lower respiratory tract infection in adults. Edinburgh (UK): Scottish Intercollegiate Guidelines Network, 2002 Jun. 2 p. Available in Portable Document Format (PDF) from the Scottish Intercollegiate Guidelines Network (SIGN) Web site.
- SIGN 50: a guideline developers´ handbook. Edinburgh (UK): Scottish Intercollegiate Guidelines Network. (SIGN publication; no. 50). Available from the SIGN Web site.
- Appraising the quality of clinical guidelines. The SIGN guide to the AGREE (Appraisal of Guidelines Research and Evaluation) guideline appraisal instrument. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network, 2001. Available from the SIGN Web site.
- A background paper on the legal implications of guidelines. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network.

PATIENT RESOURCES

The following is available:

- Key messages for patients. In: Community management of lower respiratory tract infection in adults. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network, 2002 Jun. 27 p. (SIGN publication; no. 59).

Electronic copies: Available from the Scottish Intercollegiate Guidelines Network (SIGN) Web site:

- HTML Format
- Portable Document Format (PDF)

NGC STATUS

This NGC summary was completed by ECRI on February 21, 2003. The information was verified by the guideline developer on March 12, 2003.

COPYRIGHT STATEMENT

Date Modified: 11/8/2004